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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,163	12/31/2001	Christopher D. Voltz	H052617.1151US0	9385

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AKIN, GUMP, STRAUSS, HAUER & FELD
711 LOUISIANA STREET
SUITE 1900 SOUTH
HOUSTON, TX 77002

EXAMINER

CUNNINGHAM, GREGORY F

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 09/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,163

Applicant(s)

VOLTZ ET AL.

Examiner

Greg Cunningham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. This action is responsive to communications of application filed 12/31/2001.
2. The disposition of the claims is as follows: claims 1-22 are pending in the application. Claims 1, 11, 16 and 20 are independent claims.
3. The group and/or Art Unit location of your application has changed. To aid in the correlation of any papers for this application, all further correspondence should be directed to Group Art Unit 2676 (effective 9/03). Please be sure to use the most current art unit number on all correspondence to help us route your case and respond to you in a timely fashion.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
5. The following title is suggested: Method of compensation for video color output for a computer system with digital-to-analog converter characterization data.
(Examiner's note: Although claims 1-10 lack patentable weight toward this title).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being disclosed by Thomson, (EP 780986 A2).

A. Claim 1, "A method of characterizing a plurality of digital-to-analog converters for a plurality of color channels of a video subsystem of a computer system, the method comprising the steps of: driving the plurality of digital-to-analog converters [Each of N current summation type digital-to-analog (D/A) converters (23) of a liquid crystal display driver generates an analog signal (OUT) which provides pixel video information] with a set of predetermined input digital values [when the data to be converted is at full scale]; measuring a plurality of output analog voltages [is compared in a comparator (131) with a reference voltage (VREF)] of the plurality of digital-to-analog converters in response to the driving step; and storing [developed in a capacitor] a plurality of digital characterization values [An error signal] corresponding to the plurality of output analog voltages" is disclosed on front page at (57).

(Examiner's note: The preamble prepositional clauses, "for a plurality of color channels of a video subsystem of a computer system", carry no patentable weight.

B. Claim 2, "The method of claim 1, wherein the set of predetermined input digital values comprises only a maximum input digital value for the plurality of digital-to-analog converters" is disclosed supra for claim 1, particularly at [when the data to be converted is at full scale].

C. Claim 3, "The method of claim 1, wherein the plurality of digital characterization values are stored in a non-volatile memory associated with the video subsystem" is disclosed supra for claim 1. Wherein the capacitor is an "idea capacitor", that is it exhibits infinite dc resistance and [control voltage developed in a capacitor] represents a broad interpretation of "digital characterization values".

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D. Claim 4, "The method of claim 1, the storing step comprising the step of: storing a set of digital characterization values for each digital-to-analog converter of the plurality of digital-to-analog converters" is disclosed supra for claim 1. See figure 1 of Thomson.

E. Claim 5, "The method of claim 4, wherein the set of digital characterization values comprises only a single digital characterization value for each digital-to-analog converter" is disclosed supra for claim 4. Wherein single value represents "full scale" value.

F. Claim 6, "The method of claim 1, wherein the set of predetermined input digital values [(22) of figure 1] comprises a plurality of input digital values for each digital-to-analog converter of the plurality of digital-to-analog converters" is disclosed supra for claim 1. See figure 1 of Thomson.

G. Claim 7, "The method of claim 1, wherein the plurality of digital characterization values comprise a plurality of digital representations of the plurality of analog output voltages" is disclosed supra for claim 1. See figure 1 of Thomson. Wherein "digital representations" broadly interpreted are digital, analog, or a sampled combination thereof which represent digital values, but are not necessarily digital values, used to characterize and correspond to the plurality of output analog voltages.

H. Claim 8, "The method of claim 1, wherein the plurality of digital characterization values comprise a plurality of digital values corresponding to a mathematical model for the plurality of analog output voltages" is disclosed supra for claim 1 and in col. 2, lns. 17-56; col. 5, lns. 47-53; col. 6, ln. 50 – col. 7, ln. 13. Wherein also the descriptive words current mirror, control signal, error signal, sample-and-hold, feedback and servo-loop imply mathematical modeling as basic as

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algebraic application of kirchoff current laws to z-transforms for sample-and-hold and digital feedback circuits.

I. Claim 9, "The method of claim 1, wherein the measuring step is performed with a precision termination load resistor" is disclosed supra for claim 1 and in col. 2, lns. 10-13.

Although "greater than, for example 1%" is given, this is still relatively less than 10% or 20% resistor tolerances.

J. Claim 10, "The method of claim 1, wherein the plurality of digital characterization values represents a plurality of transfer functions for the plurality of digital-to-analog converters" is disclosed supra for claim 1 and in col. 2, lns. 17-56. Wherein transfer function describes input – output relationships.

8. Claim 11 is rejected under 35 U.S.C. 102(b) as being disclosed by Wynne, (US Patent Number 5,517,191).

A. Claim 11, "A computer system [col. 2, lns. 52], comprising: a processor; and a video subsystem coupled to the processor, the video subsystem comprising: a plurality of digital-to-analog converters for a plurality of color channels of the video subsystem [col. 3, lns. 43-49]; a video connector coupled to the plurality of digital-to-analog converters for connection to a monitor [shown in figs. 2 and 4]; and a non-volatile memory storing a plurality of digital characterization values for the plurality of digital-to-analog converters [shown in fig. 2]" is disclosed by Wynne [supra as detailed].

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomson, (EP 780986 A2) as applied to claim 10 above, and further in view of Wynne, (US Patent Number 5,517,191).

A. Claim 12, "The computer system of claim 11, wherein the plurality of digital characterization values represent a plurality of transfer functions for the plurality of digital-to-analog converters" is disclosed supra for claims 10 and 11.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply output/input relationships disclosed by Thomson in combination with the computer system disclosed by Wynne, and motivated to combine the teachings because it would be common for Wynne since he employs a plurality of DACs as revealed by Wynne in abstract.

B. Claim 13, "The computer system of claim 11, wherein the plurality of digital characterization values comprise a plurality of digital representations for a plurality of analog output voltages measured for the plurality of digital-to-analog converters by driving the plurality of digital-to-analog converters with a set of predetermined input digital values" is disclosed supra for claims 1 and 11 and by Wynne in col. 2, ln. 54 – col. 3, ln. 26.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply output/input relationships disclosed by Thomson in combination with the computer system disclosed by Wynne, and motivated to combine the teachings because it would be common for Wynne since he employs a plurality of DACs as revealed by Wynne in abstract.

C. Claim 14, “The computer system of claim 11, wherein the plurality of digital characterization values comprises only a single digital characterization value for each digital-to-analog converter of the plurality of digital-to-analog converters” is disclosed supra for claims 5 and 11.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply output/input relationships disclosed by Thomson in combination with the computer system disclosed by Wynne, and motivated to combine the teachings because it would be just as applicable for Wynne since he employs a plurality of DACs as revealed by Wynne in abstract.

D. Claim 15, “The computer system of claim 11, further comprising: color management software executable by the processor to perform color correction based on the plurality of digital characterization values ” is disclosed supra for claims 1 and 11 and in col. 1, ln. 57 – col. 2, ln. 15 and lns. 43-53. wherein color correction corresponds to color management.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply output/input relationships disclosed by Thomson in combination with the color correction system disclosed by Wynne, and motivated to combine the teachings

because it would be just as applicable for Wynne since he employs a plurality of DACs as revealed by Wynne in abstract.

E. Claim 16, "A video subsystem for a computer system, comprising: a plurality of digital-to-analog converters for a plurality of color channels for the video subsystem; and a non-volatile memory storing a plurality of digital characterization values for the plurality of digital-to-analog converters" is disclosed supra for claim 11.

F. Claim 17, "The video subsystem of claim 16, wherein the plurality of digital characterization values comprise a plurality of digital representations for a plurality of analog output voltages measured for the plurality of digital-to-analog converters by driving the plurality of digital-to-analog converters with a set of predetermined input digital values" is disclosed supra for claims 13 and 16.

G. Claim 18, "The video subsystem of claim 16, wherein the plurality of digital characterization values comprises only a single digital characterization value for each digital-to-analog converter of the plurality of digital-to-analog converters" is disclosed supra for claims 14 and 16.

H. Claim 19, "The video subsystem of claim 16, wherein the plurality of digital characterization values represent a plurality of transfer functions for the plurality of digital-to-analog converters" is disclosed supra for claims 12 and 16.

I. Claim 20, "A method of characterizing a plurality of color channels of a video subsystem of a computer system, the method comprising the steps of: driving the plurality of color channels with a set of predetermined input digital values; measuring a plurality of output analog signals of the plurality of color channels in response to the driving step; and storing a plurality of digital

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characterization values corresponding to the plurality of output analog signals” is disclosed supra for claims 1 and 11.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply predetermined inputs disclosed by Thomson in combination with the color channels of rgb disclosed by Wynne, and motivated to combine the teachings because it would be just as applicable for Wynne since he employs a plurality of DACs as revealed by Wynne in abstract.

J. Claim 21, “The method of claim 20, wherein the plurality of digital characterization values are stored in a non-volatile memory associated with the video subsystem” is disclosed supra for claims 3 and 20.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply storage as disclosed by Thomson in combination with the video subsystem disclosed by Wynne, and motivated to combine the teachings because it is common in DAC comparators as revealed by Thomson.

K. Claim 22, “The method of claim 20, wherein the video system comprises a graphics controller” is disclosed supra for claim 20 and shown by Wynne in fig. 3.

Responses

11. Responses to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. If applicant desires to fax a response, (703) 308-9051 may be used for formal communications or (703) 308-6606 for informal or draft communications.

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Please label "PROPOSED" or "DRAFT" for informal facsimile communications. Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Inquiries

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Greg Cunningham whose telephone number is (703) 308-6109.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached on (703) 308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

G.F. Cunningham

gfc

September 4, 2003

Matthew C. Bella

**MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600**